REMARKS

This Amendment is submitted in response to the July 31, 2002 Office Action issued in connection with the above-identified patent application. By this Amendment, independent claims 24 and 31 have been amended as set forth above. No new matter has been added. The pending claims in this application are now independent twice amended claim 24, with claims 14, 16-18 and claims 23, 25 and 26 depending therefrom, and twice-amended independent claim 31 with claims 32, 34, 36 and 37 depending therefrom. No new matter has been added. The Examiner's review and consideration of the claim amendments are respectfully requested.

Applicants' invention is directed to a multi-piece mold used for shaping a portion of a glass tube such as an exhaust tube used in conjunction with a starter tube to produce optical fibers. The dimensions of an end of the exhaust tube used to mate with a starter tube must be exact in that the exhaust tube mating end opening must be precisely dimensioned for snuggly mating with the starter tube. This will prevent the build-up of gases at the mating joint between the starter tube and the exhaust tube, which would otherwise detrimentally effect formation of the optical fibers.

This is accomplished by the present invention, with reference to twice-amended claim 24 by providing a multi-mold piece for shaping a glass tube. The inventive mold includes an end plug piece including a cylindrical stub positioned at a free end of the end plug and having a diameter less than a diameter of the end plug. This feature is shown in FIG. 6 of the subject application. When so arranged and dimensioned, the stub is "configured for insertion into the opening of the tube". When the tube is then rotated about the cylindrical stub during the tube's

formation, the cylindrical stub maintains or controls the inner diameter of the tube so that a precise inner diameter of an exhaust tube is produced for mating with a starter tube.

Twice-amended claim 31 provides an apparatus for shaping a selected portion of a glass tube. The apparatus includes a multi-piece mold having an end plug and "a cylindrical stub positioned at a free end of the end plug and having a diameter less than a diameter of the end plug". The claim also recites "the stub configured for insertion in the opening of the tube". This arrangement allows for rotational movement of the tube about the end of the plug for controlling the inner diameter of the tube, thereby producing an exhaust tube having a proper end dimensioned for interface with a starter tube.

Turning now to the Examiner's rejections, the Examiner has relied on the combination of Wilson and Prost in rejecting applicants' claims as allegedly rendered obvious. Applicants respectfully disagree.

In the Office Action, the Examiner refers to end cap (R) in Wilson as functioning in the same manner as the "cylindrical stub for insertion within the opening of a tube at one end". A review of Wilson shows that element "R" has teeth disposed at a lower surface thereof which are intended for mating with cooperative teeth formed on an upper surface of element (E). (See FIG. 1 of Wilson). As shown in FIG. 2 of Wilson, element (R) pushes down on the top surface of the glass tube lip or opening to provide a flared end. Wilson does not include "a cylindrical stub positioned at a free end of the end plug and having a diameter less than a diameter of the end plug, with the stub configured for insertion into the opening of the tube" as is now recited in twice-amended independent claims 24 and 31. This feature is also not present in the cited Prost reference. Accordingly, for this reason, the combination of Wilson and Prost does not render twice-amended claims 24 and 31 obvious and said claims are patentable thereover.

As it is believed that the now-amended claims 24 and 31 are believed to be patentable over the combination of Wilson and Prost, it is submitted that the dependent claims are also patentable for at least the same reasons.

In view of the foregoing, it is believed that all claims are now in condition for immediate allowance.

It is believed that no fees or charges are required at this time in connection with the present application ; however, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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Dated: August 26, 2002

AMENDMENTS TO THE CLAIMS SHOWING CHANGES

In the Claims:

Please amend independent claims 24 and 31 as follows:

24. (Twice Amended) A multi-piece mold for shaping a glass tube comprising:

two elongated sleeve-like pieces which, when joined, encircle a portion of the tube for shaping the tube; and

an end plug piece including a cylindrical stub positioned at a free end of said end plug and having a diameter less than a diameter of said end plug, said stub configured for insertion into the opening of the tube [and dimensioned] for allowing rotational movement of the tube about said cylindrical stub for controlling the inner diameter of the tube; and

wherein at least one of said pieces of the mold includes a heat source, formed within the one piece, for heating the tube to render it malleable.

31. (Twice Amended) Apparatus for shaping a selected portion of a glass tube comprising:

a support means for holding the tube and for imparting rotational motion to the tube;

a multi-piece mold having one piece in which is formed a heat distribution source, said mold having two side pieces for imparting an oblate cone-like shape to a selected end portion of the tube while leaving an opening for accessing the opening of the tube at its selected end, and wherein said mold includes an end plug and a cylindrical stub positioned at a free end of said end plug and having a diameter less than

a diameter of said end plug, said stub configured for insertion [which is inserted] in the opening of the tube [and which is dimensioned] for allowing rotational movement of the tube about the end plug for controlling the inner diameter of the tube at its end surface; and

an actuatable mechanical holding means for holding the multi piece mold, including means for holding the one piece in which is formed a heat distribution source, in proximity to the selected portion of the tube for heating the selected tube portion to render it malleable, and for selectively applying the mold pieces to the tube for shaping the selected portion of the tube.